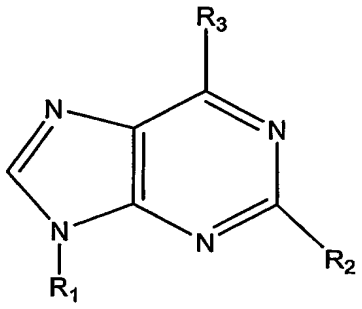
**CLAIMS:**

**1.** Use of an A3 adenosine receptor agonist (A3RAg) for the preparation of a pharmaceutical composition for administration to a subject suffering from multiple sclerosis and being in need of a neuralgic protective treatment.

**2.** The use according to Claim 1 wherein said pharmaceutical composition is for oral administration.

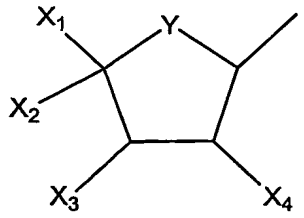
**3.** The use of Claim 1 wherein said A3RAg is a compound within the scope of the general formula (I):




(I)

wherein,

- $R_1$ represents an alkyl, hydroxyalkyl, carboxyalkyl or cyanoalkyl or a group of the following general formula (II):



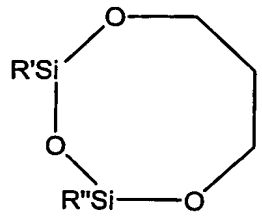

(II)

in which:

- Y represents an oxygen, sulfur or $CH_2$;
- $X_1$ represents H, alkyl, $R^aR^bNC(=O)$- or $HOR^c$-, wherein
  - $R^a$ and $R^b$ may be the same or different and are selected from the group consisting of hydrogen, alkyl, amino, haloalkyl, aminoalkyl, BOC-aminoalkyl, and cycloalkyl or are joined together to form a heterocyclic ring containing two to five carbon atoms; and
  - $R^c$ is selected from the group consisting of alkyl, amino, haloalkyl, aminoalkyl, BOC-aminoalkyl, and cycloalkyl;

- $X_2$ is H, hydroxyl, alkylamino, alkylamido or hydroxyalkyl;

- $X_3$ and $X_4$ represent independently hydrogen, hydroxyl, amino, amido, azido, halo, alkyl, alkoxy, carboxy, nitrilo, nitro, trifluoro, aryl, alkaryl, thio, thioester, thioether, -OCOPh, -OC(=S)OPh or both $X_3$ and $X_4$ are oxygens connected to >C=S to form a 5-membered ring, or $X_2$ and $X_3$ form the ring of formula (III):




(III)

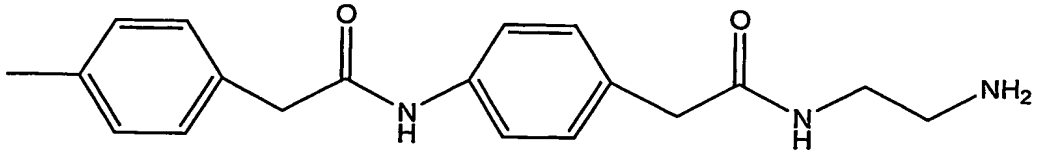
where **R'** and **R"** represent independently an alkyl group;

- $R_2$ is selected from the group consisting of hydrogen, halo, alkylether, amino, hydrazido, alkylamino, alkoxy, thioalkoxy, pyridylthio, alkenyl; alkynyl, thio, and alkylthio; and

- $R_3$ is a group of the formula $-NR_4R_5$ wherein

- $R_4$ is a hydrogen atom or a group selected from alkyl, substituted alkyl or aryl-NH-C(Z)-, with **Z** being O, S, or $NR^a$ with $R^a$ having the above meanings; wherein when $R_4$ is hydrogen than

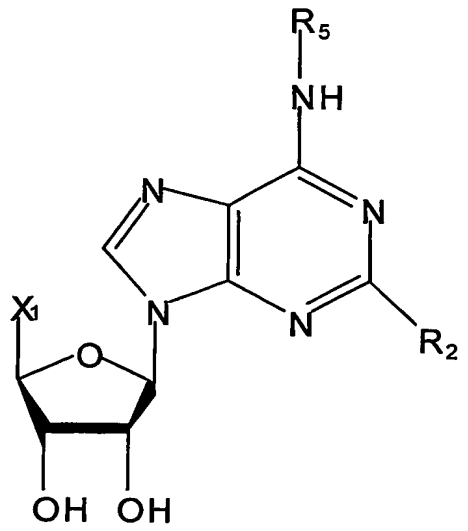
- $R_5$ is selected from the group consisting of R- and S-1-phenylethyl, benzyl, phenylethyl or anilide groups unsubstituted or substituted in one or more positions with a substituent selected from the group consisting of alkyl, amino, halo, haloalkyl, nitro, hydroxyl, acetoamido, alkoxy, and sulfonic acid or a salt thereof; benzodioxanemethyl, fururyl, L-propylalanyl- aminobenzyl, β-alanylamino-benzyl, T-BOC-β-alanylaminobenzyl, phenylamino, carbamoyl, phenoxy or cycloalkyl; or $R_5$ is a group of the following formula:




or when $R_4$ is an alkyl or aryl-NH-C(Z)-, then, $R_5$ is selected from the group consisting of heteroaryl-$NR^a$-C(Z)-, heteroaryl-C(Z)-, alkaryl-$NR^a$-C(Z)-, alkaryl-C(Z)-, aryl-NR-C(Z)- and aryl-C(Z)-; **Z** representing an oxygen, sulfor or amine;

or a physiologically acceptable salt of the above compound.

**4.** The use of claim 1 wherein said A3RAg is a nucleoside derivative of the general formula (IV):



(IV)

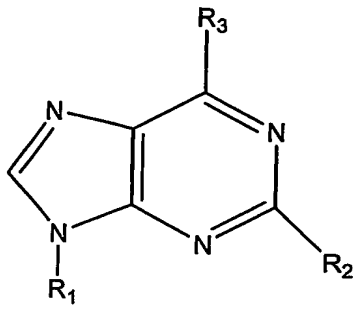
wherein $X_1$, $R_2$ and $R_5$ are as defined in claim 3, and physiologically acceptable salts of said compound.

**5.** The use of Claim 1 wherein said A3RAg is selected from $N^6$-2- (4-aminophenyl)ethyladenosine (APNEA), $N^6$-(4-amino-3-iodobenzyl) adenosine-5'-(N-methyluronamide) (AB-MECA), $N^6$-(3-iodobenzyl)-adenosine-5′-N-methyluronamide (IB-MECA) and 2-chloro-$N^6$-(3-iodobenzyl)- adenosine-5′-N-methyluronamide (Cl-IB-MECA).

**6.** A pharmaceutical composition for the treatment of multiple sclerosis that comprises an effective amount of an A3RAg and a pharmaceutically acceptable carrier.

**7.** The composition according to Claim 6 for oral administration.

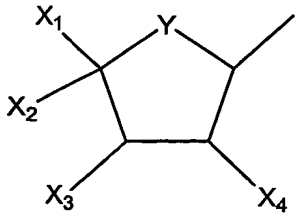
**8.** The composition according to Claim 6 wherein said A3RAg is a compound within the scope of the general formula (I):




(I)

wherein,

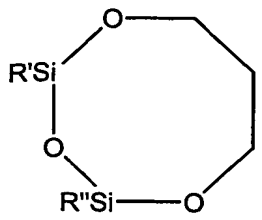
- $R_1$ represents an alkyl, hydroxyalkyl, carboxyalkyl or cyanoalkyl or a group of the following general formula (II):




(II)

in which:

- **Y** represents an oxygen, sulfur or $CH_2$;
- $X_1$ represents H, alkyl, $R^aR^bNC(=O)$- or $HOR^c$-, wherein
  - $R^a$ and $R^b$ may be the same or different and are selected from the group consisting of hydrogen, alkyl, amino, haloalkyl, aminoalkyl, BOC-aminoalkyl, and cycloalkyl or are joined together to form a heterocyclic ring containing two to five carbon atoms; and
  - $R^c$ is selected from the group consisting of alkyl, amino, haloalkyl, aminoalkyl, BOC-aminoalkyl, and cycloalkyl;
- $X_2$ is H, hydroxyl, alkylamino, alkylamido or hydroxyalkyl;
- $X_3$ and $X_4$ represent independently hydrogen, hydroxyl, amino, amido, azido, halo, alkyl, alkoxy, carboxy, nitrilo, nitro, trifluoro, aryl, alkaryl, thio, thioester, thioether, -OCOPh, -OC(=S)OPh or both $X_3$ and $X_4$ are oxygens connected to >C=S to form a 5-membered ring, or $X_2$ and $X_3$ form the ring of formula (III):




(III)

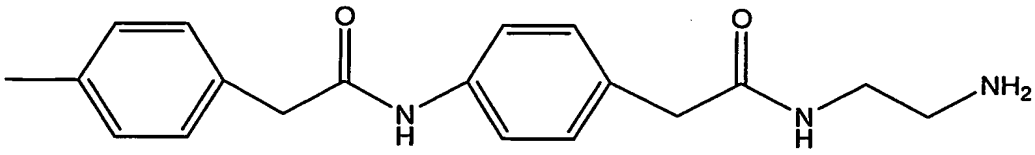
where **R'** and **R''** represent independently an alkyl group;

- $R_2$ is selected from the group consisting of hydrogen, halo, alkylether, amino, hydrazido, alkylamino, alkoxy, thioalkoxy, pyridylthio, alkenyl; alkynyl, thio, and alkylthio; and

- $R_3$ is a group of the formula $-NR_4R_5$ wherein

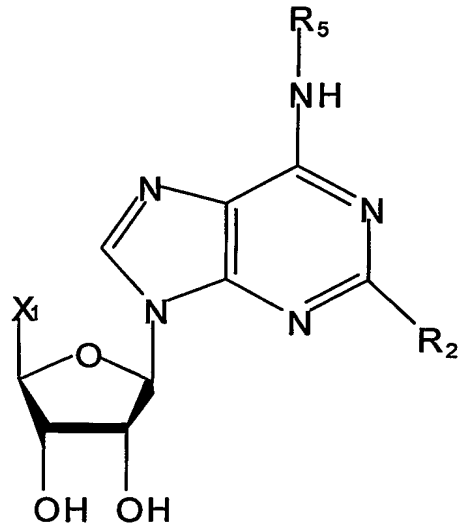
- $R_4$ is a hydrogen atom or a group selected from alkyl, substituted alkyl or aryl-NH-C(Z)-, with **Z** being O, S, or $NR^a$ with $R^a$ having the above meanings; wherein when $R_4$ is hydrogen than

- $R_5$ is selected from the group consisting of R- and S-1-phenylethyl, benzyl, phenylethyl or anilide groups unsubstituted or substituted in one or more positions with a substituent selected from the group consisting of alkyl, amino, halo, haloalkyl, nitro, hydroxyl, acetoamido, alkoxy, and sulfonic acid or a salt thereof; benzodioxanemethyl, fururyl, L-propylalanyl- aminobenzyl, β-alanylamino-benzyl, T-BOC-β-alanylaminobenzyl, phenylamino, carbamoyl, phenoxy or cycloalkyl; or $R_5$ is a group of the following formula:




or when $R_4$ is an alkyl or aryl-NH-C(Z)-, then, $R_5$ is selected from the group consisting of heteroaryl-$NR^a$-C(Z)-, heteroaryl-C(Z)-, alkaryl-$NR^a$-C(Z)-, alkaryl-C(Z)-, aryl-NR-C(Z)- and aryl-C(Z)-; **Z** representing an oxygen, sulfor or amine; or a physiologically acceptable salt of the above compound.

**9.** The composition according to Claim 6 wherein said A3RAg is a nucleoside derivative of the general formula (IV):



(IV)

wherein $X_1$, $R_2$ and $R_5$ are as defined in claim 3, and physiologically acceptable salts of said compound.

**10.** The composition according to Claim 6 wherein said A3RAg is selected from $N^6$-2- (4-aminophenyl)ethyladenosine (APNEA), $N^6$-(4-amino-3-iodobenzyl) adenosine- 5'-(N-methyluronamide) (AB-MECA), $N^6$-(3-iodobenzyl)-adenosine-5′-N- methyluronamide (IB-MECA) and 2-chloro-$N^6$-(3-iodobenzyl)- adenosine-5′-N-methyluronamide (Cl-IB-MECA).